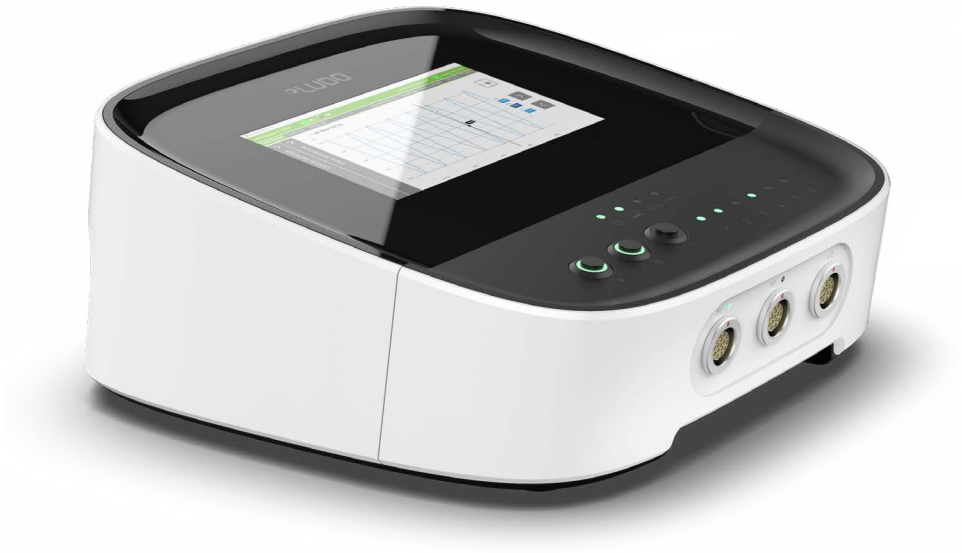
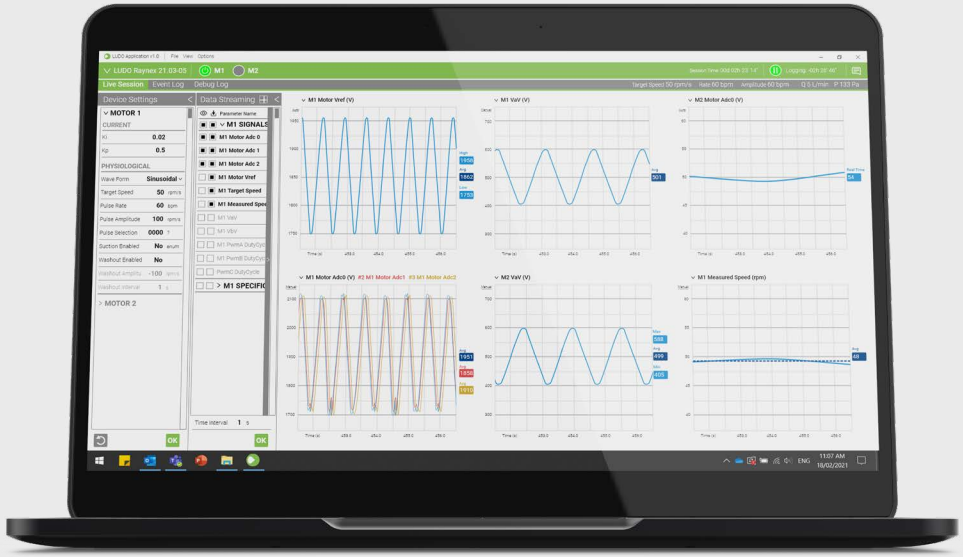
A unique platform to accelerate MCS development

Ready to use controller platform, configurable to your technology development

- Safety Critical Architecture suitable for a future Class III medical device
- Customisable Field Oriented Control
- Ease of integration of physiological and motor control algorithms
- 2 motor drives with status indicators (can customise for more)
- Programmable sensor inputs/outputs, LED indicators & function switches
- Removable SD card for data logging
- Data streaming to the LUDO User Application
- Switching between microcontroller and FPGA processor





Customisable user interface supports flexible testing with real-time feedback

- Data visibility in real time
- Data logging from all available streams
- Configurable physiological & motor control parameter including pump speed, motor control gains, motor on/off, pulse rate, and pulse amplitude
- Customisable to view extra data streams
- Customisable dashboards to monitor tests and trials
- Event & fault extracts from the controller

Motor Control

Motor Drive	6 independent half-bridge outputs (configurable)
Drive Power	System: 90W @ 24VDC Output: 3-Phase BLDC 90W max 2x3-Phase BLDC 45W max (per motor) Current: 5A RMS max (per motor)

Physical

Physical Dimensions	250 x 212 x 110 mm
Configurable Indicators	6 LEDs
Configurable Switches	3 illuminated momentary switches
Fixed Indicators	Motor status (x2), Power, Error, Computer Connected and FPGA Bypass
USB-C Port	For computer connection
SD Card	1 removable micro SD
Integrated Touchscreen	In development
Operating Conditions	Room temperature 20 - 25°C and laboratory humidity

Connectors

DC Power	12-48VDC @ 4A
Motor Drive Connector	2 x 3 phase (5.6A per pin)

External interfaces

Engineering Console	USB (Virtual Serial COMs) with isolation*, OTS connector
Driveline	Customer specific during initial customisation

Available for connection to expansion boards or front panel I/O connector during initial customisation

I2C	1
SPI	1
GPIO uC (incl PWM)	8
GPIO FPGA	8
ADC uC	3
UART	2

Data Streaming

Data Streaming Channels	20
Data Streaming Rate	100 Hz
Data Streaming Resolution	16 bits

Batteries

Internal/External Batteries	external*

* by selectable option

Customer Algorithm Support

Physiological Drive	Customisable @ 1 kHz
Physiological & Pump Control Algorithms	C/C++17/Matlab**/Simulink**
FOC Algorithm	Standard, customisable with customer Simulink model via code generation

Microcontroller

Model	TI RMS57L843
Frequency	330 MHz
DMIPS	1.66 DMIPS/MHz
Flash	4096 KB
RAM	512 KB
Safety Features	Dual-core lockstep, ECC on RAM & FLASH
Realtime Clock	Yes

FPGA (hardware included but not activated in default configuration)

Model	M2GL050
Max Logic Elements	56 K
Math Blocks	72
Embedded Memory	1826 Kb

** via code generation to C